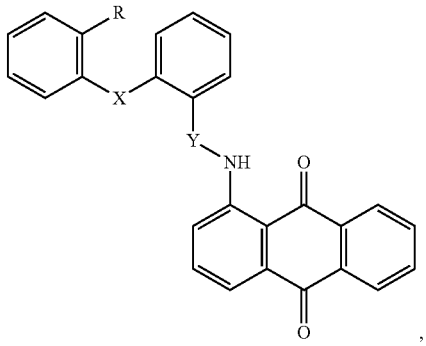
infected with HIV comprising administering to said subject an effective amount of a composition or formulation comprising a small molecule. The small molecule prevents or decreases an interaction between a Nef protein and a Calnexin protein.

[0010] Another embodiment of the invention relates to a method for screening for a small molecule that restores or preserves cholesterol efflux in a cell by inhibiting or decreasing an interaction between a Nef protein and a Calnexin protein including: incubating a cell expressing a full-length Nef protein or a segment of the full-length Nef protein and a full-length Calnexin protein or a segment of the full-length Calnexin protein with a small molecule of interest; assaying the incubated cell for cholesterol efflux; and assaying the incubated cell for a level of binding between the full-length Nef protein or the segment of the full-length Nef protein and the full-length Calnexin protein or the segment of the full-length Calnexin protein. In such embodiments, an increase in cholesterol efflux and a decrease in the level of binding as compared to a control is indicative of restoration or preservation of cholesterol efflux by inhibiting or decreasing an interaction between the Nef protein and the Calnexin protein as a result of incubation of the cell with the small molecule of interest.

[0011] An embodiment of the invention relates to a small molecule having the structure of Formula (I):

(I)

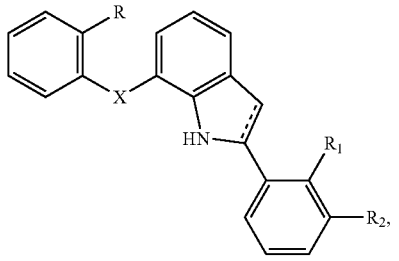


,

[0012] Where R is H, CH_2OH, COOH or $COOCH_3$; X is CH_2, NH, O, NCH_3, or SO_2; and Y is a bond, CH_2, CO or SO_2.

[0013] An embodiment of the invention relates to a small molecule having the structure of Formula (II):

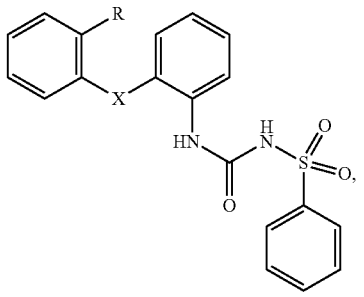
(II)



[0014] Where R, R_1, and R_2 are independently selected from H, CH_2OH, COOH or $COOCH_3$; and X is CH_2, NH, O, NCH_3, or SO_2.

[0015] An embodiment of the invention relates to a small molecule having the structure of Formula (III):

(III)



[0016] Where R is H, CH_2OH, COOH or $COOCH_3$; and X is CH_2, NH, O, NCH_3, or SO_2.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Further objectives and advantages will become apparent from a consideration of the description, drawings, and examples.

[0018] FIG. **1**A shows a schematic of HA-tagged full-length and mutant calnexin constructs expressed in HEK293T cells;

[0019] FIG. **1**B is an immunoprecipitation assay showing expression of HA-tagged full-length and mutant calnexin constructs HEK293T cells;

[0020] FIG. **2**A shows representative models of Nef-CNX binding;

[0021] FIG. **2**B shows interactions in Nef-CNX docking models mapped on Nef and calnexin sequences;

[0022] FIG. **3**A shows immunoprecipitation results comparing the interaction between Nef Wild Type and Calnexin and NefK4,7A and Calnexin;

[0023] FIG. **3**B shows immunoprecipitation results comparing the interaction between Nef Wild Type and Calnexin and various Nef mutants and Calnexin;

[0024] FIG. **3**C shows ABCA1 abundance as a function of mutations to Nef;

[0025] FIG. **3**D shows NefK4,7A interaction with ABCA1 as compared to ABCA1 interaction with wild-type Nef;

[0026] FIG. **4**A shows the effects of the mutation of certain residues on Nef on regulation of ABCA1;

[0027] FIG. **4**B shows the effects of the mutation of certain residues on Nef on cholesterol efflux;

[0028] FIG. **5**A shows the results of immunoprecipitation assays showing that Nef directly binds to Calnexin and its cytoplasmic tail;

[0029] FIG. **5**B is a graph mapping Nef binding to Calnexin and its cytoplasmic tail;

[0030] FIG. **6**A is a model showing where various small molecules disrupt the Nef and calnexin interaction;

[0031] FIG. **6**B shows the structures of various small molecules according to some embodiments of the invention;

[0032] FIG. **6**C is a graph showing the effects of various compounds on cell metabolism as a function of the dose;

[0033] FIG. **6**D is a blot and bar graph showing the effects of several compounds ion Nef/CNX interaction;